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EXAMINER

MASINICK, MICHAEL D

ART UNIT	PAPER NUMBER
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2128

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03/04/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/559,644

Applicant(s)

FERTIG ET AL.

Examiner

Michael D. Masinick

Art Unit

2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)
- Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's arguments filed 1/14/2008 have been fully considered but they are not persuasive.
2. First, applicant suggests that the Jeremy Elson Dissertation does not constitute "prior art" as it is not a "printed publication".
3. As an initial matter, the publication date of the Elson Dissertation "Time Synchronization in Wireless Sensor Networks" is being re-established as 30 May, 2003. This document was previously cited with the publication date of June 29, 2003 based on the fact that this document was indexed by the "Wayback Machine: Internet Archive" at that point in time proving that it was publicly accessible – however, the priority date of the PCT application (which has yet to be perfected) is established at June 3, 2003 requiring further research into the publication date of the Elson dissertation.
4. The personal homepage of Jeremy Elson (<http://www.circlemud.org/~jelson/>) contains a link to his "writings" with the notation (last updated 30 May 2003). The writings page itself, also included as NPL with this office action, lists the dissertation. This means that the dissertation was publicly available on the internet no later than 30 May 2003.
5. Applicant cites two pieces of case law where a graduate thesis/dissertation has been held not to constitute a "printed publication". The dates on these findings were 1986 and 1989 respectively. With all deference to the legal decisions made in these cases, the facts of the cases are not remotely similar to the current situation. With the advent of the internet in the mid to late 1990s, the term "publication" took on a new meaning with respect to prior art documents. That said, it is completely irrelevant that this piece of prior art is a dissertation. It was published

on the internet at least on May 30th, 2003 (if not before) and a link was published in another web document to said dissertation. This constitutes publication under USC 102(b) as the publication was widely available to the entire world and published in a forum that is/was accessible to search engines. A document has been furnished from the "Wayback Machine: Internet Archive" showing that the homepage of Jeremy Elson was indexed by that search engine as early as 1998 and would certainly have been found in a search by any major search engine.

6. For this matter, examiner rejects the argument that the Elson dissertation is not available as prior art and maintains the previous rejection based on both pieces of prior art published by Jeremy Elson.

7. Regarding applicant's argument that the Elson document shows only "ideal laboratory conditions". This argument has prompted the USC 112 first paragraph rejection below. The specification in this case provides virtually no guidance as to how system provides "synchronization in a microsecond range". Paragraph 0023 of the specification states:

8. [0023] From the point of view of a drive, it is thereby ensured that a clear position is defined for each point in time. Since this statement applies for all the drives of the packaging machine, in interaction with a microsecond-accurate synchronisation of the individual drives and microsecond-accurate provision of the setpoint values, a definite behaviour for the entire system is fixed at each point in time. According to a basic concept of the invention, a deterministic time behaviour thus applies to the entire system. This time behaviour allows a large number of rapid drives to be provided in a packaging machine and actuated, coordinated and monitored by means of the provided control unit.

9. Considering the Elson document: A student studying for an advanced degree at a major U.S. school known for research in the computer engineering who presumably began writing this these well before the 30 May 2003 date was only able to recreate a microsecond synchronization in "ideal laboratory conditions" (term of applicant). However, the specification of the current application lists virtually no instruction for a user on the ways to carry out and execute this invention. No best mode is given, no instructions for improving the prior art are given. The purpose of the enablement requirement that the specification describe the invention in such terms that one skilled in the art can make and use the claimed invention is to ensure that the invention is communicated to the interested public in a meaningful way. The information contained in the disclosure of an application must be sufficient to inform those skilled in the relevant art how to both make and use the claimed invention.

10. That said, the claims in this case show no requirements other than "in a microsecond range". The Elson publications show synchronization as low as one microsecond under "ideal laboratory conditions" yet notes that opportunities for variable delay can be expected. However, even variable delay would still yield a result "in a microsecond range" as suggested by the claims.

11. Applicant states that the Elson document only works with Sensor networks and does not show actuators and drive systems. Examiner notes that a "drive system" as used in the current specification is no different than a standard actuator as they generally have the same meaning in the art. The Elson dissertation shows the use of actuators in the synchronization system in the **opening sentence** of the document and discusses them throughout.

12. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., several cycles, at a minimum two cycles) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

13. Finally, applicant argues that Elson does not show controlling drive systems "with the accuracy to the level of one microsecond". Examiner maintains that the claim structure "in a microsecond range" is VERY different than "with the accuracy to the level of one microsecond".

Claim Rejections - 35 USC § 112

14. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

15. Claims 28-42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically as addressed above, applicant claims to be able to synchronize sensors, actuators, and drive systems "in the microsecond range" yet provides virtually no explanation as to how the system operates or how this microsecond range is achieved.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 28, 30, 31, 35-38, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,788,980 to Johnson et al in view of "Time Synchronization for Wireless Sensor Networks" and "Time Synchronization in Wireless Sensor Networks" (Dissertation) both by Jeremy Elson.

3. Regarding claims 28 and 42, Johnson shows a packaging apparatus, comprising: a central control unit (Enterprise Server 52); a plurality of sensors (Column 1, line 57); a plurality of actuators (Column 1, line 57); a drive system (Column 2, lines 1-6); means for recording in digital format actual values of said plurality of sensors (Column 8, lines 28-39), actual values of said plurality of actuators and actual values of said drive system; means for determining setpoint values or control commands for said drive system (Column 8, lines 28-39); means for transmission in digital format of said setpoint values of control commands for said drive system between said drive system and said central control unit via a transmission protocol from said central control unit via said means for data transmission to said plurality of actuators or said drive system (Figures 1 and 2, network); means for data transmission between said plurality of sensors, said plurality of actuators, said drive system and said central control unit of said actual values of said plurality of sensors, said actual values of said plurality of actuators and said actual values of said drive system recorded by said means for recording in digital format, said means for data transmission including wireless transmission means (Column 6, lines 6 and 7) means for

evaluating data received by said central control unit from said plurality of sensors (Central control), said plurality of actuators and said drive system; and, means for eliminating errors by use of redundancy in said means for data transmission and said means for transmission in said digital format. Examiner notes that inherently all wireless protocols must contain error correction technology with redundancy in order to function as it is inevitable that some data loss will occur in a wireless medium. Teaching references can be provided if requested by applicant.

4. Johnson does not show a transmission protocol for said wireless transmission means operating cyclically with short cycle times and performing a synchronization of said plurality of sensors, said plurality of actuators and said drive system with time-dependent action and further providing said actual values and said setpoint values or control commands for said drive system in each cycle and accuracy of said synchronization in a microsecond range.

5. As noted above in the response to arguments section, the Elson documents show the research done on Time Synchronization in Wireless sensor/actuator networks which provide data at each cycle and the synchronization is in the microsecond range ("capable of precision on the order of 1 microsecond").

6. Based on the analysis presented above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the concepts presented in the Elson documents to improve the time synchronization of Johnson from the 50 millisecond range into the microsecond range (a clear improvement and a benefit easy to see).

1. Referring to claim 30, Johnson shows wherein said short cycle times are in a millisecond pulse (Column 14, line 36).

2. Referring to claim 31, Johnson shows wherein said means for eliminating errors in said means for data transmission and said means for transmission in said digital format includes an HDLC procedure. Examiner notes that HDLC procedures are part of the standard for internet communication. Johnson shows the use of internet communication between computers which inherently uses an HDLC procedure.
3. Referring to claims 35 and 36, Johnson shows wherein said means for data transmission takes place bidirectionally or unidirectionally (Figures 1 and 2. Sensors can be read only and may not receive data).
4. Referring to claim 37, Johnson shows a programming unit connected to said central control unit (Figure 2 – Operators Console).
5. Referring to claim 38, Johnson shows wherein data of slow running processes are only recorded in individual time-spaced cycle pulses, so that only the data of fast running processes are contained in cycle pulses contained in between (Column 14, lines 35-38).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 29, 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,788,980 to Johnson et al in view of “Time Synchronization for Wireless Sensor Networks” and “Time Synchronization in Wireless Sensor Networks” (Dissertation) both

by Jeremy Elson as applied above, and further in view of U.S. Patent No. 6,415,439 to Randell et al.

7. With reference to what was shown above, Johnson/Elson does not show a servo motor controlled by specifying position data at associated points in time done by wireless communication by RF, broadband radio, and infrared.

8. Randell shows a protocol for a wireless control system having a servo motor controlled by specifying position data at associated points in time done by wireless communication by RF, broadband radio, and infrared.

9. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the protocol for wireless control of servo motors as part of the control system of Johnson because it allows for several wireless devices to be controlled simultaneously by a single controller (similar to Johnson), engages in bidirectional communication, is forward compatible and is inexpensive.

Allowable Subject Matter

10. Claims 39-41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael D. Masinick whose telephone number is (571) 272-3746. The examiner can normally be reached on Mon-Fri, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael D Masinick/

Primary Examiner, Art Unit 2128